

Unit 1 Review - SOLUTIONS KEY

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$$\begin{aligned} 1) & 13 - 12 \div (2 + 2) \cdot 3 - 3 \\ & = 13 - 12 \div 4 \cdot 3 - 3 \\ & = 13 - 3 \cdot 3 - 3 \\ & = 13 - 9 - 3 \\ & = \textcircled{1} \end{aligned}$$

$$\begin{aligned} 2) & 4\sqrt{25} \div (9 - 4) \cdot 2 \\ & = 20 \div 5 \cdot 2 \\ & = 4 \cdot 2 \\ & = \textcircled{8} \end{aligned}$$

$$\begin{aligned} 3) & 48 \div 12 \cdot 2 \\ & = 4 \cdot 2 \\ & = \textcircled{8} \end{aligned}$$

$$\begin{aligned} 4) & \frac{1}{4}(21 + 3) \div 3 + 6 \\ & = \frac{1}{4}(24) \div 3 + 6 \\ & = 6 \div 3 + 6 \\ & = 2 + 6 = \textcircled{8} \end{aligned}$$

$$\begin{aligned} 5) & \frac{10(5 - 6)}{2} + 5 = \frac{10(-1)}{2} + 5 = \frac{-10}{2} + 5 \\ & = -5 + 5 = \textcircled{0} \end{aligned}$$

$$6) 8 + 3(4 - 1) = 8 + 3(3) = 8 + 9 = \textcircled{17}$$

$$\begin{aligned} 7) & 10 - \{22 \div [2 + (3 \cdot 3)]\} \\ & = 10 - \{22 \div 11\} \\ & = 10 - 2 \\ & = \textcircled{8} \end{aligned}$$

$$\begin{aligned} 8) & (3 - 8)^2 + (4 - 3 \cdot 2) \\ & = (-5)^2 + (4 - 6) \\ & = 25 + -2 \\ & = \textcircled{23} \end{aligned}$$

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9) $\frac{8}{x+3} = \frac{x}{x+3}$ is sometimes true because the equation is only true when $x = 8$

$$10) \frac{12(2x+1)}{12} = \frac{12(2x+3)}{12}$$

$$\frac{2x+1}{-2x} = \frac{2x+3}{-2x}$$

$$1 = 3 \Rightarrow \text{never true}$$

$$11) |x| = 14, \quad x = 14, -14$$

$$12) \frac{-3(4r-8)}{-3} = \frac{-36}{-3}$$

$$\frac{4r-8}{+8} = \frac{12}{+8}$$

$$\frac{4r}{4} = \frac{20}{4}$$

$$r = 5$$

$$13) y^{\frac{7}{3}}$$

$$14) 4\sqrt{x^3}$$

S3

$$15) (4n^2 - 6n + 3) - (7n + 3 - 8n^2)$$

$$= 4n^2 - 6n + 3 - 7n - 3 + 8n^2$$

$$= \boxed{12n^2 - 13n}$$

$$16) 5x^3 + 2x + 4x^2 - x$$

$$= \boxed{5x^3 + 4x^2 + x}$$

$$17) \boxed{x^5 + x^3 + x^2}$$

(Because there are no like terms)

$$18) 4(c+2b) - 3(2c+b)$$

$$= 4c + 8b - 6c - 3b$$

$$= \boxed{-2c + 5b}$$

$$19) \frac{x \cdot 5}{4 \cdot 5} + \frac{4(x-3)}{4 \cdot 5} = \frac{5x + 4x - 12}{20}$$

$$= \boxed{\frac{9x - 12}{20}}$$

$$20) \frac{2x}{6} + \frac{2(x+1)}{2 \cdot 3} = \frac{2x}{6} + \frac{2x+2}{6} = \boxed{\frac{4x+2}{6}}$$

$$\text{or } \frac{2x+1}{3}$$

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$$21) \frac{V}{\pi r^2} = \frac{\pi r^2 h}{\pi r^2}$$

$$h = \frac{V}{\pi r^2}$$

$$22) V \cdot D = \frac{M}{V}$$

$$\frac{V \cdot D}{D} = \frac{M}{D}$$

$$V = \frac{M}{D}$$

$$23) \frac{a(b-c)}{b-c} = \frac{d}{b-c}$$

$$a = \frac{d}{b-c}$$

$$24) 3A = \frac{x+y}{3}$$

$$3A = x + y$$

$$3A - y = x$$

$$25) y = \frac{1}{4}x - 12$$

$$4(y+12) = \frac{4}{1}x$$

$$x = 4(y+12) = 4y + 48$$

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$$26) 3x + 7 = -5x$$

$$\frac{7}{-8} = \frac{-8x}{-8}$$

$$x = \frac{-7}{8}$$

$$27) 2(x-3) + x = 4x + 2$$

$$2x - 6 + x = 4x + 2$$

$$3x - 6 = 4x + 2$$

$$-6 = x + 2$$

$$-2 = -2$$

$$x = -8$$

$$28) 5x + 6 = 36$$

$$\frac{5x}{5} = \frac{30}{5}$$

$$x = 6$$

$$29) 6x + 2 = 5x - 4$$

$$-5x = -5x$$

$$x + 2 = -4$$

$$-2 = -2$$

$$x = -6$$

$$30) \frac{2}{3}x + 5 = 7$$

$$\frac{2}{3}x = 2 \cdot \frac{3}{2}$$

$$x = 3$$

$$31) 6(6v+6) - 5 = 1 + 6v$$

$$36v + 36 - 5 = 1 + 6v$$

$$36v + 31 = 1 + 6v$$

$$30v + 31 = 1$$

$$30v + 31 = 1$$

$$\frac{30v}{30} = \frac{-30}{30}$$

$$v = -1$$

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$$32) (\sqrt{x+4})^2 = (5)^2$$

$$\begin{array}{r} x+4 = 25 \\ -4 \quad -4 \end{array}$$

$$\underline{x = 21}$$

$$33) \sqrt{x+4} = -5 \text{ has}$$

no real solution because there is no real number whose square root is negative.

$$34) \frac{2}{2} \frac{3\sqrt{x+1}}{1} = \frac{12}{2}$$

$$(\cancel{3}\sqrt{x+1})^2 = (6)^3$$

$$\begin{array}{r} x+1 = 216 \\ -1 \quad -1 \end{array}$$

$$\underline{x = 215}$$

$$35) \begin{array}{r} x^2 + 1 = 50 \\ -1 \quad -1 \end{array}$$

$$\sqrt{x^2} = \sqrt{49}$$

$$\underline{x = \pm 7}$$

$$36) \frac{3x^4}{3} = \frac{243}{3}$$

$$\sqrt[4]{x^4} = \sqrt[4]{81}$$

$$\underline{x = 3}$$

$$37) \begin{array}{r} 2x^3 - 5 = 427 \\ +5 \quad +5 \end{array}$$

$$\frac{2x^3}{2} = \frac{432}{2}$$

$$\sqrt[3]{x^3} = \sqrt[3]{216}$$

$$\underline{x = 6}$$

$$38) \begin{array}{r} 3 + 4\sqrt{x+1} = 5 \\ -3 \quad -3 \end{array}$$

$$(4\sqrt{x+1})^4 = (2)^4$$

$$\begin{array}{r} x+1 = 16 \\ -1 \quad -1 \end{array}$$

$$\underline{x = 15}$$

$$39) \frac{\sqrt{2x+1}}{5} = -10.5$$

$$\sqrt{2x+1} = -50$$

no real solution

b/c I can't take the square root of a negative number

$$40) \begin{array}{r} x^5 + 7 = -25 \\ -7 \quad -7 \end{array}$$

$$\sqrt[5]{x^5} = \sqrt[5]{-32}$$

$$\underline{x = -2}$$

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41) $5n + 12$

42) $6(x+2)$

43) $n^3 - 10$

44) $5c$

45) $9(b-y)$

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$$46) 4x^2 - 10x + 3 + 7x - 6$$

$$= \boxed{4x^2 - 3x - 3}$$

$$47) 8x^2 + 12x - 3 - (5x^2 - 3x + 5)$$

$$= 8x^2 + 12x - 3 - 5x^2 + 3x - 5$$

$$= \boxed{3x^2 + 15x - 8}$$

$$48) 5x^3 - 2x^2 + 7 - x(5 - x)$$

$$= 5x^3 - 2x^2 + 7 - 5x + x^2$$

$$= \boxed{5x^3 - x^2 - 5x + 7}$$

$$49) l(l-3)$$

$$= l^2 - 3l$$

$$50) \text{ binomial } + 5x^2 + 3x = 2x^2 - 10x$$

$$- (5x^2 + 3x) - (5x^2 + 3x)$$

$$\Rightarrow 2x^2 - 10x - (5x^2 + 3x)$$

$$= 2x^2 - 10x - 5x^2 - 3x$$

$$= \boxed{-3x^2 - 13x}$$

or just think $5x^2 + \text{what} = 2x^2$,

$$3x + \text{what} = -10x$$

$$51) \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \quad \begin{array}{l} a=3 \\ b=-4 \\ c=-7 \end{array}$$

$$\frac{-(-4) \pm \sqrt{(-4)^2 - 4(3)(-7)}}{2(3)}$$

$$= \frac{4 + \sqrt{16 + 84}}{6}$$

$$= \frac{4 + \sqrt{100}}{6} = \frac{4 + 10}{6} = \frac{14}{6}$$

$$= \boxed{\frac{7}{3}}$$